

SUPPORT FOR THE AMENDMENT

This Amendment cancels Claim 28; amends Claims 20-21, 29 and 32; and adds new Claim 39. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 20 is found in canceled Claim 28 and in the specification at least at page 15, lines 14-22. Support for Claim 39 is found in Claim 21. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 20-27 and 29-39 will be pending in this application. Claims 20 and 34 are independent. Claims 26-27, 30 and 34-38 are withdrawn from consideration pursuant to a Restriction/Election of Species Requirement.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention relates to a phase-change memory cell capable of undergoing a large number of write cycles. The phase-change memory cell includes between two electrical contacts a portion in a memory material with an amorphous-crystalline phase change and vice versa, as a stack, with an active central area located between two passive outmost areas. The material of the passive outmost areas has at least one chemical element in common with the material of the active central area, and the passive outmost areas are made in a same material. Specification at page 1, lines 5-7; page 6, lines 25-30; page 15, lines 10-11, 14-22.

Claims 20-23, 28-29 and 31-33 are rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 4,845,533 ("Pryor"). Claim 24 is rejected under 35 U.S.C. § 103(a) over Pryor in view of JP2000-339750 ("JP-750"). Claim 25 is rejected under 35 U.S.C. § 103(a) over Pryor and JP-750 and further in view of U.S. Patent Application Publication No. US 2004/0051161 A1 ("Tanaka").

Pryor discloses thin film electrical devices in which between layers of amorphous carbon is sandwiched a semiconductor layer 38 including one or more chalcogenide elements (i.e., sulphur, selenium and tellurium)(e.g., $\text{As}_{34}\text{Te}_{28}\text{S}_{21}\text{Ge}_{16}\text{Se}_1$ in Table I; $\text{As}_{34}\text{Te}_{28}\text{S}_{21}\text{Ge}_{16}\text{Se}_1$ in Table II; Te, $\text{Ge}_{65}\text{Te}_{31}\text{Sb}_2\text{S}_2$, $\text{Ge}_{24}\text{Te}_{72}\text{Sb}_2\text{S}_2$ in Table III). Pryor at column 10, lines 23-25, 40-47; column 16, lines 43-53; column 20, lines 19-32.

However, Pryor fails to disclose or suggest the independent Claim 20 limitations of "a stack with a central area located between two outmost areas ... the material of the passive outmost areas having at least one chemical element in common with the material of the active central area". With such a feature one skilled in the art can proceed with successive tests in order to select the composition of the layers of the phase-change memory cell of the present invention. Specification at page 16, lines 27-29.

JP-750 and Tanaka fail to remedy the deficiencies of Pryor.

JP-750 discloses an optical recording medium and not a phase-change memory cell. Layers 13 and 15, which are the passive outmost areas, are not in a same material. Layer 13 consists of nitrides, oxides or carbides. Layer 15 consists of one chemical element chosen from a list. The two outmost passive layers 13 and 15 do not have the same function. Layer 13 must be transparent and layer 15 has a lower thermal conductivity and compressive stress than those of layer 13. One of ordinary skill in the art would not combine JP-750 with Pryor because the subject matter of the two references are so different. If the skilled artisan did combine JP-750 with Pryor, then the skilled artisan would not obtain the subject matter of Claim 20, because in JP-750 the two outmost passive layers are not in a same material.

The Office Action at page 7, lines 9-12, cites Tanaka against Claim 25 for suggesting that the material of the active central area includes between about 16% and 30% of tellurium and between about 84% and 70% of antimony.

Because the cited prior art fails to suggest all the limitations of independent Claim 20, the prior art rejections should be withdrawn.

Claim 21 is rejected under 35 U.S.C. § 112, second paragraph. To obviate the rejection, Claim 21 is amended by deleting the recitation "and/or".

Claims 29 and 32 are objected to. To obviate the objection, Claims 29 and 32 are amended to recite "further comprising".

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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